Indiana Department of Transportation (INDOT) Program Development Division.

Bridge Management Process

Purdue Road School

March 30, 2005

INDOT, Bridge Management Process "Major Functions"

INDOT Bridge Management process is an ongoing series of activities that includes but not limited to the following tasks:

1- Develop, Maintain & Operate the Indiana Bridge Management System (IBMS) software .

2- Bridge Improvement Projects.

3- Monitoring Bridge Projects.

4- Bridge Preventive Maintenance Program.

INDOT, Bridge Management Process Cont'd

1- Develop, Maintain & Operate the Indiana Bridge Management System (IBMS).

- Developed by Joint INDOT &Purdue University, Civil Engineering Dept. through JTRP as a research project using federal (SPR) funds.
- National Bridge Inspection (NBI) data as input.
- 43 input items from NBI data.
- Output of each module is Input for the next module.

INDOT, Bridge Management Process Cont'd

- IBMS Modules:
  - Decision Tree (Dtree), Cost, Rank and Optimization Modules
  - Deterioration models with predictions for different bridge components and road classes.
  - Ranks projects based on Total Disutility and Cost Effectiveness.
  - Recommends different alternatives with cost at any given year within the analyses limits including Do Nothing.

INDOT, Bridge Management Process Cont'd

Prior to the Stage I of the INDOT, Program Development Process-State (PDP-S) or, "call for projects":

- IBMS Operation
- Perform Analyses
- Generate Report w/recommendations
- District Bridge Engineers Review/Comments/Considerations
- Re-evaluations.

INDOT, Bridge management process, Cont'd

2- Bridge Improvement Projects:

As part of the PDP-S Process Stage II or, Project Management Group (PMG) process includes:

- Review;
  - Bridge Inspection/inventory data/pictures
  - Support documents(FA3)
  - Duplications
  - Location / Kin.
- Prioritize;
  - Needs
  - Scope, Rehab Min.(2-3) / Replace(5years)
  - FY Workload / Fund Availability.

INDOT, Bridge Management process, Cont'd

3- Monitoring :

- Annual District/Design/Program Development Divisions Meetings
  * Check Status
  * Change/pull/push projects
  * Update information (uniformity)

- Other Involvements:
  Provides comments and facilitate/coordinate meetings to assist project advancements.

INDOT, Bridge Management process, Cont'd

- Engineering Assessments/ Environment Sections
  * Design Division.
  * Land Acquisition Division
  * Budget & Fiscal Management Division.
  * FHWA.
  * DNR.
  * Consultants

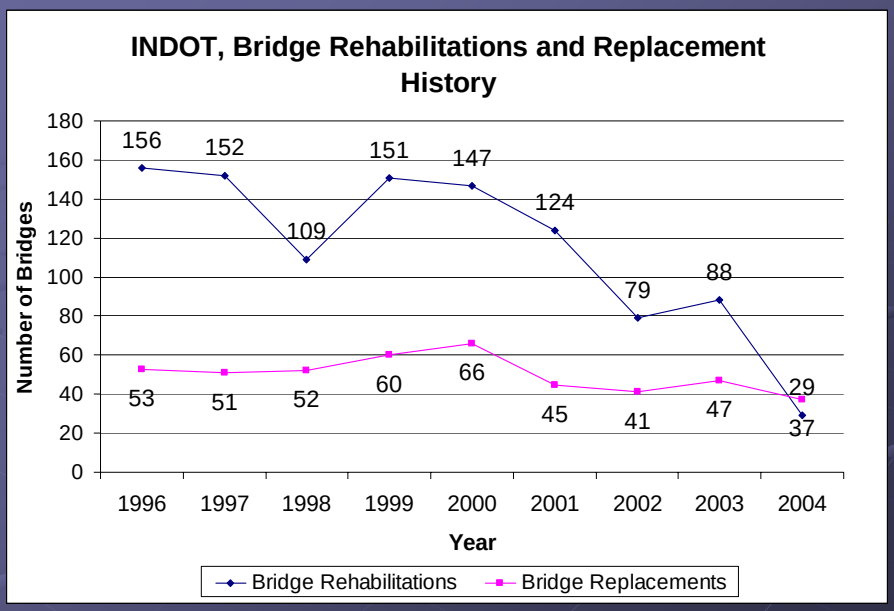
INDOT, Bridge Management process, Cont'd.

4- Bridge Preventive Maintenance Program

- Additional Assistance to District Bridge Crew; that IBMS is not recommending.
- FHWA, agreement
  - * STP, funds
  - * $ 500,000/contract/district/year
  - * Limited work items
  - * Documents developed in-house (No consultant)
  - - September 2001- July 2003
  - * 8 contracts (data available)
  - * Total 171 bridges
  - * Average cost, $ 18,652.42/bridge.

INDOT, Bridge Management Process, cont'd.

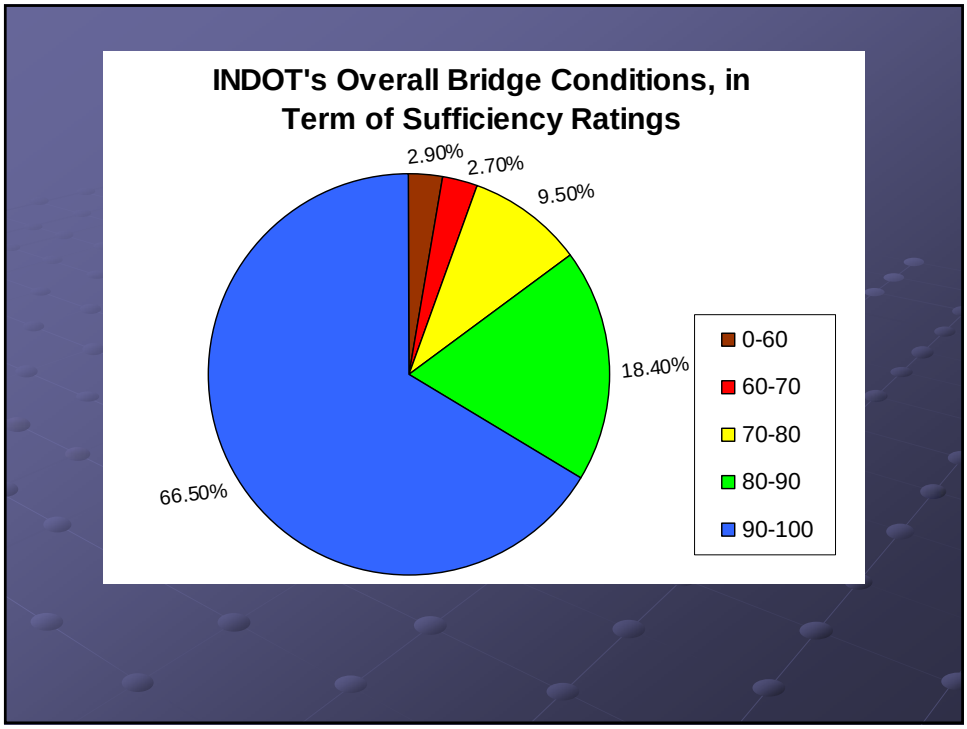
- Results:
  - Prevents Further Deterioration,
    - * Minor work will not become major reconstructions,
    - * Avoid unexpected Traffic/lane restrictions,
    - * Drop in number of bridge rehabilitation projects that normally done through consultants,
    - * Extended Service life 3-5 years,
    - * Cost saving while maintaining the network's health.

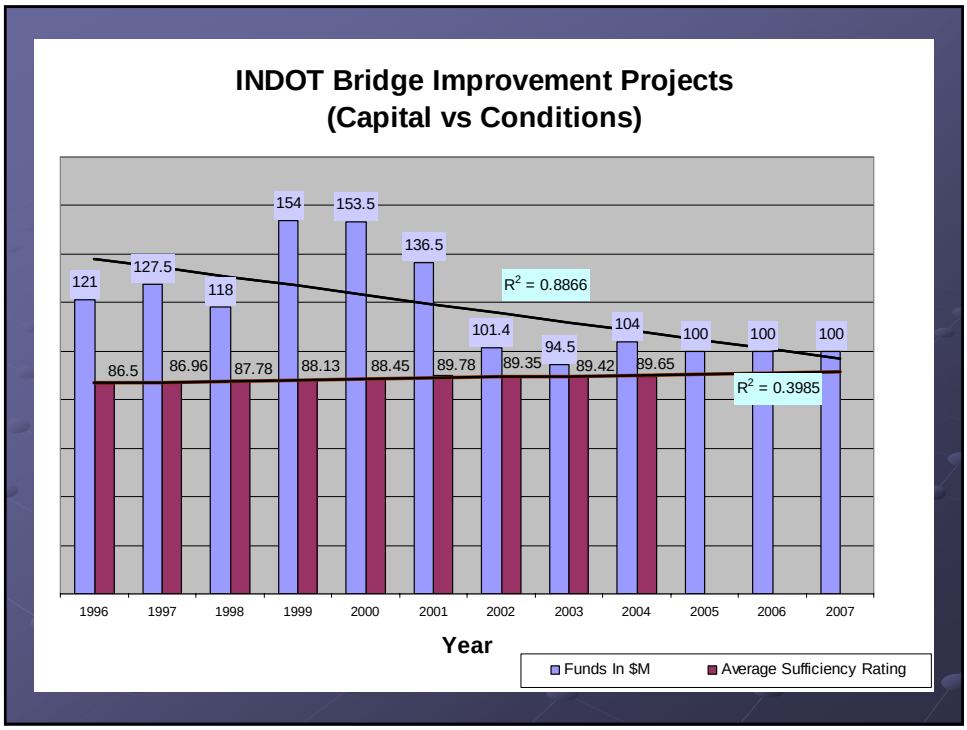


Funds VS. Sufficiency Ratings.

Year	Fund ($ M)	# Of Bridges (INDOT)	<50% Poor	% Poor	50-80%	% Marginal-Fair	80-100%	% Good-Excellent	Ave. Suff.
1996	$121	N/A	N/A	N/A	N/A	N/A	N/A	N/A	86.5
1997	$127.5	5100	179	3.51	952	18.67	3969	77.82	86.96
1998	$118	5096	147	2.89	879	17.3	4070	79.81	87.78
1999	$154	5100	143	2.81	833	16.35	4124	80.84	88.13
2000	$153.5	5139	135	2.63	797	15.51	4207	81.86	88.45
2001	$136.5	5132	119	2.32	740	14.42	4273	83.26	89.78
2002	$101.4	5134	108	2.14	683	13.3	4344	84.6	89.35
2003	$94.5	5125	111	2.16	706	13.77	4309	84.1	89.42
2004	$104	5140	108	2.1	674	13.1	4358	84.8	89.65

N/A – Not Available


INDOT's Overall Bridge Conditions, in Term of Sufficiency Ratings
2.90%
2.70%
9.50%
18.40%
66.50%
0-60
60-70
70-80
80-90
90-100


INDOT Bridge Improvement Projects (Capital vs Conditions)
121
127.5
118
154
153.5
136.5
101.4
94.5
104
100
100
100
86.5
86.96
87.78
88.13
88.45
89.78
89.35
89.42
89.65
R2 = 0.8866
R2 = 0.3985
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
Funds In $M
Average Sufficiency Rating

INDOT, Bridge Management Process, cont'd.

- Comments, Questions?

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